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United States
Department of
Agriculture

Forest Service
Southern Region

Draft Environmental Impact Statement
VEGETATION MANAGEMENT
in the Ozark/Ouachita Mountains
SUMMARY

Oz 1/3 Sum

Management Bulletin R8-MB 23

June 1989

A 13.92/2:

INVITATION TO REVIEW THE DRAFT EIS

Dear Reader:

Here is a Summary of the Draft Environmental Impact Statement (DEIS) for Vegetation Management on National Forests of the Ozark/Ouachita Mountains area. During June 1988, we asked for your suggestions on issues. Interested individuals helped us identify 5 issues, and we would appreciate your help in reviewing the Draft EIS.

We have examined eight alternatives which represent a range of possible approaches to vegetation management (one proposes no action). The preferred alternative is alternative F. All alternatives reflect our effort to address issues you identified. They propose programs that:

- Consider effects from intensive site-disturbing methods.
- Minimize the effects of herbicides to people, wildlife, and the environment, and allow aerial application (alternatives G and H).
- Achieve desired objectives for other resource outputs, while promoting habitat conditions for a variety of plant and animal species and enhancing conditions for recovery of threatened, endangered, or sensitive species.
- Reduce risk of injury to workers using manual methods.
- Enhance visual quality along right-of-way corridors emphasizing timing of activities and promoting flowering vegetation.

This summary is provided to you so that you may quickly review our findings. It condenses two volumes (the EIS, Appendices) containing over 600 pages. If, after reading this Summary, you need the EIS or Appendices, contact me and I will send whatever you need immediately.

On the next page is a postage-paid response form. You need not use this form if you prefer to submit your comments another way. Please try to be specific, and if possible tell us why you are making each comment.

Sincerely,

Steve McCorquodale

STEVE MCCORQUODALE
Leader, Vegetation Management EIS Team

Phone: 404-347-7076
Write to: Vegetation Management EIS
1720 Peachtree Road, NW
Atlanta, Georgia 30367-9102

June 14, 1989

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RESPONSE FORM

We're providing this form to make it convenient for you to respond. You need not use this form though.

However you decide to respond, please help us by making specific and meaningful comments.
Have we done an adequate scientific analysis? Do the Alternatives respond to your concerns?

Comments on Scientific Analysis:

Why?

Comments on Alternatives:

Why?

Other:

Why?

(use additional sheets as necessary)

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DRAFT Environmental Impact Statement for

VEGETATION MANAGEMENT

in the Ozark/Ouachita Mountains

USDA Forest Service
Southern Region

Arkansas and Oklahoma

Responsible Agency	Responsible Official	Information Contact
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Comments Must Be Received By: **September 7, 1989**

Abstract

This environmental impact statement presents eight alternative ways to manage vegetation on Ozark/Ouachita Mountains national forests of the USDA Forest Service's Southern Region. These alternatives range from no treatment to maximum vegetation control. Treatment alternatives use different mixes of methods and vary numbers of acres treated so as to present a wide array of possible approaches. Effects of each alternative on the physical and biological environment and on social and economic conditions are presented. Alternative F is the Forest Service's preferred alternative. Comments must be received by: **September 7, 1989**

Note to Reviewers

Reviewers should provide the Forest Service with comments during the review period. This will enable the Forest Service to analyze and respond to comments at one time and to use the information to prepare the final environmental impact statement, thus avoiding undue delay in the decision-making process. Reviewers have an obligation to structure their participation in the National Environmental Policy Act process so that it is meaningful and alerts the agency to reviewers' positions and contentions, Vermont Yankee Nuclear Power Corp. V. NRDC, 435 U.S. 519, 553 (1978). Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the final environmental impact statement, Wisconsin Heritages, Inc. v. Harris, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Comments should be specific and should address the adequacy of the statement or merits of the alternatives discussed.

SUMMARY

Introduction

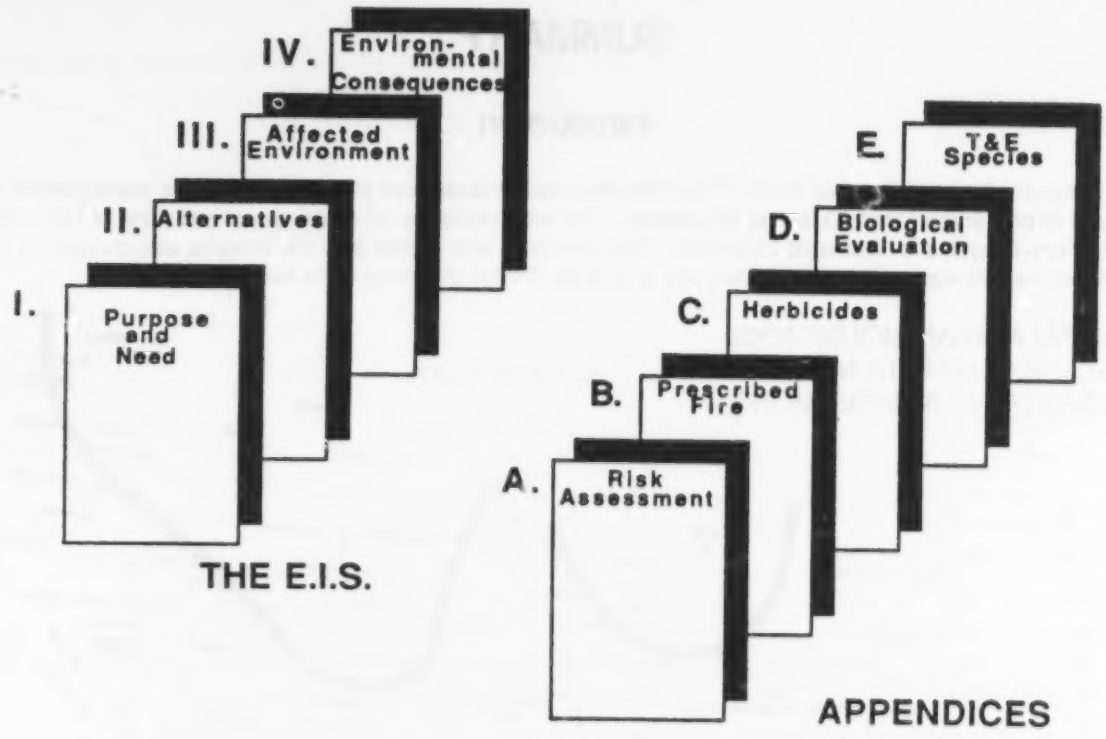
This summary is an introduction to the Environmental Impact Statement (EIS) for vegetation management on national forests in the Ozark/Ouachita Mountains. This area includes all of Arkansas and parts of McCurtain and LeFlore Counties in Southeast Oklahoma. This summary was written after the analysis was completed and the text of the EIS was written. It provides only a glimpse of data contained in the two volume EIS.

1. APPALACHIAN MOUNTAINS
2. OZARK/OUACHITA MOUNTAINS
3. COASTAL PLAIN/PIEDMONT

Vegetation management is the manipulation of plants by means other than timber harvest. It is done to help young trees survive and grow, to provide a variety of wildlife habitats, to reduce hazardous fuels, and to maintain safe and efficient travelways and utility lines.

The EIS discloses effects of vegetation management methods on human health and safety, wildlife, threatened and endangered species, vegetation, soils, water and aquatic animals, air, visual quality, cultural rersources, wildfire, recreation, and social and economic conditions. Based on issues raised by the public, the document evaluates eight alternatives that differ with respect to acres treated, mix of methods, and intensity of tools available in each method. **Alternative F is the preferred alternative.** This alternative decreases the use of herbicides, decreases use and intensity of mechanical methods, increases the use of manual methods, and increases prescribed fire though decreases its intensity. Prescribed fires are low to moderate intensity, and when herbicides are used priority is to use herbicides and application methods that pose minimum risks to humans, wildlife, and non-target plants.

Chapters I through IV form the heart of the EIS. Chapter I defines the need for vegetation management and displays issues. Chapter II explains each alternative, describes methods and tools, prescribes measures to mitigate environmental effects, and compares alternatives. Chapter III describes the environment of the Ozark/Ouachita Mountains. Chapter IV presents detailed analyses of environmental effects based on extensive scientific research. This summary presents highlights of these chapters.



The EIS also contains five major appendices. Appendix A is the Risk Assessment, a complex scientific document that analyzes herbicide risks to human and wildlife health. These risks are a product of the potency of each chemical and the degree of exposure to it. The evaluation compares herbicide doses people and animals may get with doses evaluated in laboratory studies. Each herbicide is analyzed for its potential to cause toxic and other effects such as cancer, mutations, and birth defects. Appendices B and C discuss the effects of prescribed fire and herbicides on soil and water. These appendices contain large bodies of research data under one cover and thus improve accessibility for readers. Appendix D is a biological evaluation of the effects of the preferred alternative on threatened, endangered, proposed and sensitive species. Appendix E lists proposed, threatened, endangered, and sensitive species.

Scope of Decisions

The Southern Region contains a variety of landscapes, plant communities, soil types, and climates. To account for some of these differences, the Region is divided into three areas to analyze vegetation management activities. This EIS covers the Ozark/Ouachita Mountains area. Other EIS's cover the Coastal Plain/Piedmont and Appalachian Mountains.

This EIS accepts the land allocation and resource output decisions of Forest Land and Resource Management Plans. It evaluates various vegetation management methods and tools needed to achieve Plan goals and objectives. The makeup of methods, tools, and mitigation measures in the selected alternative may require some changes in Plan direction.

The EIS discloses general effects over broad areas. Since environmental conditions can vary greatly from site to site, each project must be evaluated for its own site-specific effects. Site-specific analyses may reference (tier to) this EIS and EIS's accompanying Plans as appropriate. Methods and tools available for use on the ground are limited to those specified in the selected alternative.

Public issues

About 300 people responded to a request to help identify five issues the EIS should address. These issues form the basis for developing and comparing alternatives. They express multiple concerns and values, many of which are opposed to each other.

Balance of Resources: At issue is the mix of resources and outputs produced. Some people believe that an increase in market outputs like timber conflicts with an increase in non-market outputs like aesthetics.

Prescribed Fire: This method is generally viewed as "natural" and needed for wildlife, some ecosystems, and wildfire control. Concern centers on season, frequency, and intensity of prescribed fires as they affect soil, water, air, and visual quality.

Manual Method: People like use of manual because they believe it provides employment and has less effect on non-targets than other methods. Some people recognize risks associated with manual methods but others suggest risks are less concern than unknowns with herbicides.

Herbicides: Many people fear that herbicides have serious effects on human health and on non-target plants and animals, or that they may have adverse effects on drinking water and aquatic communities. Some people fear that aerially or ground broadcast applied herbicides increase risk to human health and non-targets. Others vie aerial application as essential for economical treatment of some areas.

Mechanical Treatments: People suggest mechanical treatments should be used more in some areas. Possible adverse effects on soils, water, and aesthetics are of concern.

Affected Environment

This EIS covers 2.7 million acres on 3 national forests in Arkansas and Oklahoma. This area lies in two physiographic divisions: the Interior Highlands and two small units in the Coastal Plains. The Interior Highlands division includes the Ozark Plateaus and Ouachita provinces. The Ozark Plateaus province is a broad upland of sedimentary roads containing the Salem Plateau, Springfield Plateau and Boston Mountains. The Ouachita province is a series of parallel ridges and valleys formed by intense deformation of young sedimentary rocks. It contains the Arkansas Valley and Ouachita Mountains. The St. Francis National Forest lies on Crowley's Ridge in east Arkansas and the Tiak Ranger District is in the floodplain of the Little and Red Rivers in extreme southeast Oklahoma. Both of these units lie in the Coastal Plain physiographic province.

Major vegetation groups are the oak-hickory forests, dominant in the Ozark Plateau, oak-pine forests dominant in the Ouachita province and southern floodplain (bottomland) forests. There are 9 animal species and no plant species classified as threatened or endangered or proposed for listing. Soils are as varied as the geology and climate of the mountains, ranging from deep fertile soils in floodplains to soils severely eroded by past, inefficient farming, mining and logging. Water is usually abundant and of high quality. High yielding aquifers, however, are found principally in large river valleys and areas underlain by limestone.

Vegetation management is presently done on an average of 101,174 acres per year, or 3.7 percent of national forest lands in the Ozark/Ouachita Mountains. Of this total, 57,229 acres (56.5 percent) are now treated with prescribed fire; 7,868 acres (7.8 percent) with mechanical methods; 28,605 acres (28.3 percent) by herbicides; 7,472 acres (7.4 percent) with manual methods; and none by biological methods.

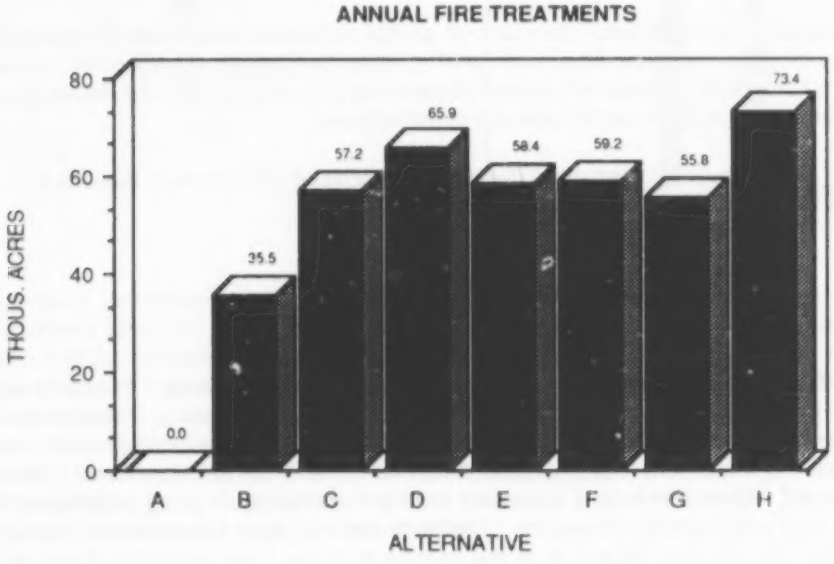
Vegetation Management Methods and Tools

The five methods evaluated by the EIS are prescribed fire, mechanical, manual, biological, and herbicides. The mix of these methods varies markedly by alternative.

Prescribed Fire

Prescribed fire is the planned use of fire under specific conditions. Six firing techniques are used that vary how a fire is set in relation to the wind. Prescribed fires may be set by hand using drip torches or by using helicopters.

In general, light to moderate burns retain an effective ground cover of scorched or charred litter. Severe burns consume all litter and duff and alter the color and structure of mineral soil.



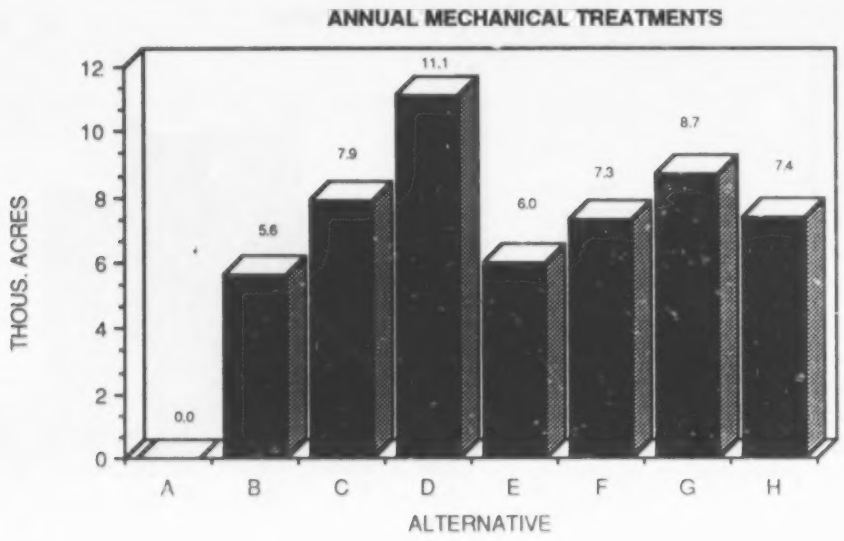
Mechanical Methods

Mechanical methods involve the use of ground machines. They are classed into three groups based on their potential for soil disturbance by erosion, compaction, and nutrient loss.

Mowing tools cut small vegetation above ground. Chopping tools are bladed drums that roll over and chop vegetation. Shearing tools are tractor-mounted blades that cut vegetation above ground. Scarifying tools scoop small depressions in the soil at wide intervals. Ripping tools plow furrows at wide intervals. Mowing, chopping, shearing, scarifying, and ripping cause low soil disturbance.

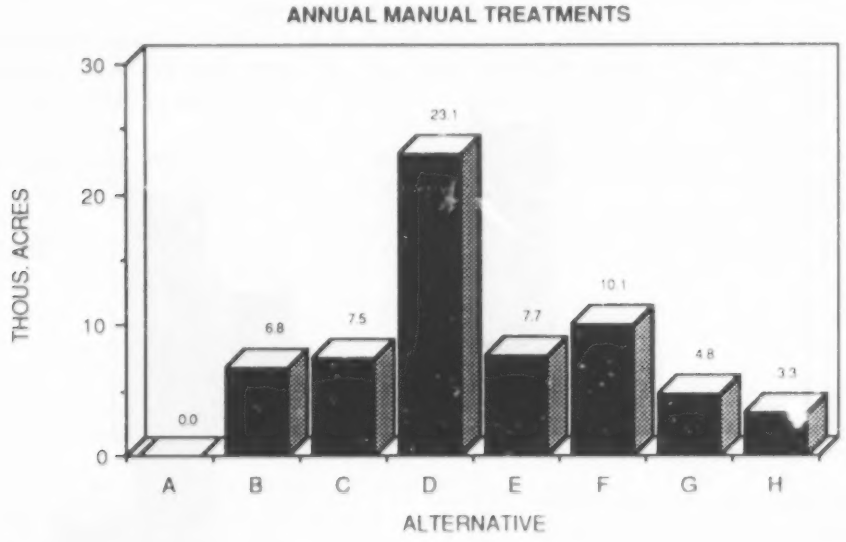
Piling causes moderate soil disturbance. Piling tools replace the dozer blade on tractors and roll vegetation, slash, and some litter into piles or windrows.

Raking and disking cause high soil disturbance. Unlike piling tools, raking tools push all litter and some topsoil into piles or windrows. Disking loosely tills soil.



Manual Methods

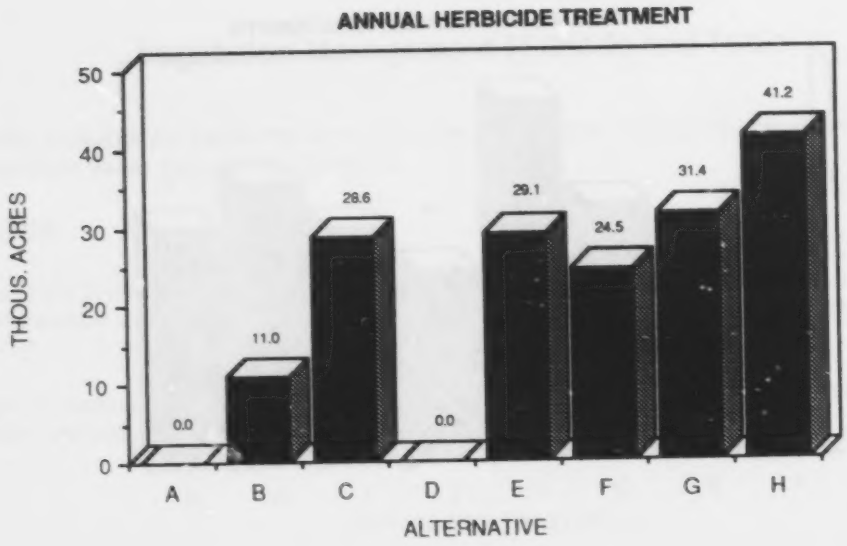
Manual methods employ hand tools to cut vegetation above ground. Non-power tools are axes, brush hooks, and clippers. Power tools include chain saws and brush cutters.



Herbicides

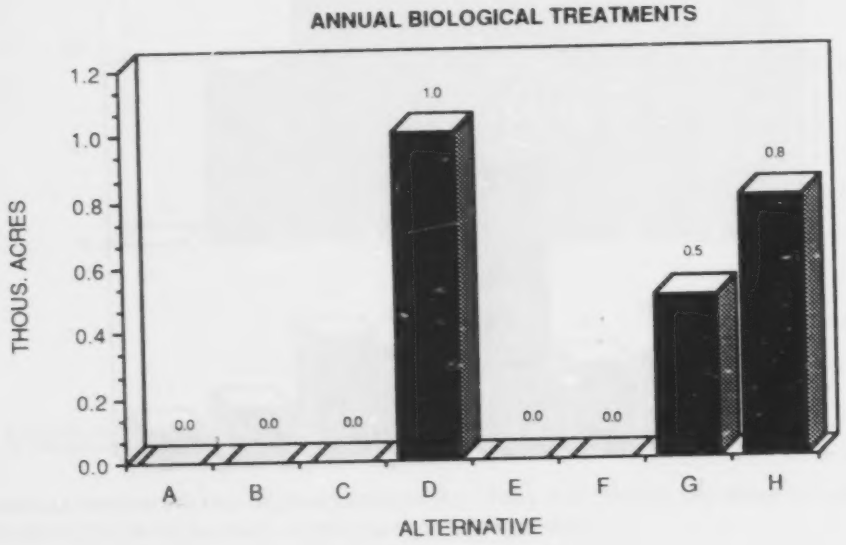
The 7 herbicides evaluated for use in the Ozark/Ouachita Mountains are fosamine; glyphosate; hexazinone; imazapyr; picloram; sulfometuron methyl; and triclopyr. In addition, four additives (diesel oil, kerosene, mineral oil, and limonene) were analyzed for their effects on human and wildlife health.

Herbicides are used to kill or suppress target plants. They are applied in liquid or granule form by hand, machine, or air. Hand applications use backpack sprayers and tree injectors for liquids and hand-held spreaders for granules. Machine and helicopter applications use boom/nozzle sprayers for liquids and power spreaders for granules.



Biological Methods

The only biological method evaluated is the use of livestock within existing grazing allotments.



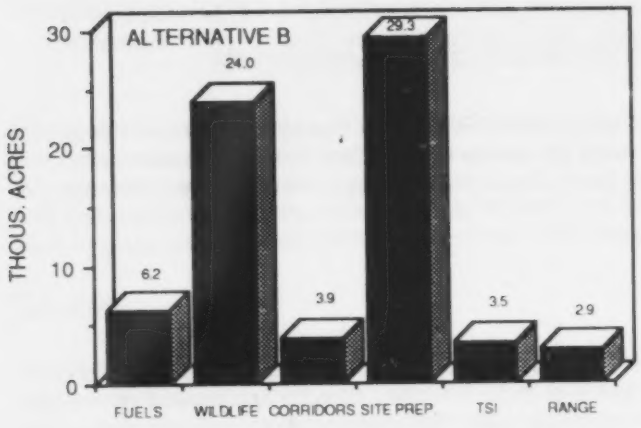
Alternatives

Eight alternatives were developed to respond to issues. They vary by acres treated per year, mix of methods, and intensity of tools used in each method.

Alternative A (No Action)

Vegetation management is not done. Existing vegetation is allowed to grow without manipulation.

Alternative B



Vegetation management is restricted to treatments which achieve minimum resource objectives. Nearly all activities receive treatments, but only when critically needed, and at low intensity. Acres treated per year total 58,815 and biological methods are not used. Use of herbicide methods is minor.

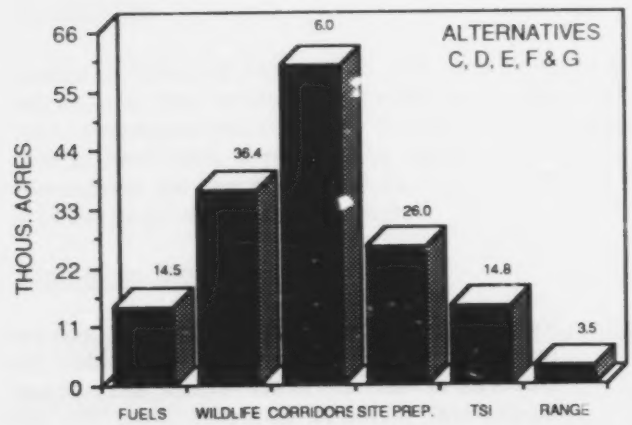
Herbicides are applied by hand. When they are used, priority is given to herbicides and application methods that pose minimum risks to humans, wildlife, and non-target plants. Mechanical treatments are limited to low-disturbance tools. Only low-intensity, less frequent prescribed fire is used.

Alternative C

This alternative continues present levels of treatment specified in Forest Land and Resource Management Plans. Acres treated per year total 101,174. Use of all methods except biological is fairly extensive, with prescribed fire and herbicides dominating.

Herbicides are applied by hand and machine. Mechanical methods cause low to moderate soil disturbance. Prescribed fire is low to high intensity. Grazing is not used. All sorts of manual treatments are done.

Alternative D



Herbicides are not used. Acres treated per year total 101,174. Acres treated with prescribed fire increase by 8,669, with mechanical increase by 3,273, with manual increase by 15,620, and with biological (pine release) increase by 1,043. These increases replace the use of herbicides. Mechanical methods cause low to moderate soil disturbance. Prescribed fire is low to moderate intensity. All sorts of manual treatments are done.

Alternative E

Use of mechanical methods decreases 1,872 acres from present, and use of prescribed fire, herbicides and manual methods increases to compensate for that reduction. Acres treated per year total 101,174. Biological methods are not used.

When herbicides are used, priority is given to herbicides and application methods that pose minimum risk to humans, wildlife, and non-target plants. Mechanical methods cause low to moderate soil disturbance but far less mechanical site preparation is done. Prescribed fire is low to moderate intensity. The full range of manual tools and treatments is available.

Alternative F (Preferred)

Use of manual methods and prescribed fire increases, and use of herbicides and mechanical methods decreases (a total shift of 4,636 acres). Acres treated per year total 101,174. Manual and prescribed fire treatments increase from present by 2,646 and 1,990 acres, respectively. Biological methods are not used.

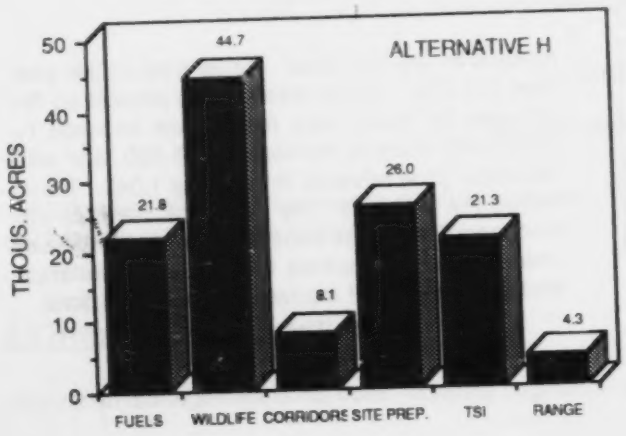
When herbicides are used, priority is given to herbicides and application methods that pose minimum risk to humans, wildlife, and non-targe plants. Mechanical methods cause low to moderate soil disturbance. Prescribed fire is low to moderate intensity. All sorts of manual treatments are done.

Alternative G

Use of herbicides increases by 2,783 acres from present levels. Use of mechanical methods also increase by 835 acres. Prescribed fire and manual methods use decreases comparably. Acres treated per year total 101,174. Emphasis is on herbicides and mechanical methods, and use of biological methods is minimal.

When herbicides are used, priority is given to herbicides and application methods that pose minimum risks to humans, wildlife, and non-target plants. Herbicides are applied aerially on 600 acres per year for site preparation and utility line maintenance. Mechanical methods cause low to moderate soil disturbance. Prescribed fire is low to moderate intensity.

Alternative H



Vegetation management is done to achieve maximum vegetation control. Herbicides are broadcast at maximum effective rates, and intensive mechanical methods and prescribed fire are favored. Acres treated per year total 126,156. Emphasis on herbicides and prescribed fire increases markedly from present.

Herbicides are applied by hand, machine, and air. Herbicides are applied aerially on 14,500 acres per year for pine release, utility line maintenance, and site preparation. Mechanical methods cause low to high soil disturbance. Prescribed fire is low to high intensity.

Management Requirements and Mitigation Measures

Management requirements and mitigation measures are "do's" and "don't's" applied on the ground to assure that treatments accomplish their objectives and produce fewer adverse impacts and more benefits. Some requirements and measures are general and apply to all vegetation management methods. Others pertain to only one method. Analysis shows they significantly reduce adverse environmental effects. Chapter II covers them in detail and discusses their effectiveness. They are summarized below.

General

Detailed site-specific analyses and biological evaluations are required for each project. Timber stand improvement guides ensure adequate tree stocking and growth. Stream stability is protected by retaining bank vegetation and preventing debris deposits. Cultural resources are inventoried and protected. Safety equipment is mandated for field workers. Methods and tools are matched to visual quality objectives, and treatments are timed to protect scenic values. Vegetation is treated to enhance variety of wildlife habitat. Corridors are managed to control erosion, protect public safety and facilities, and enhance wildlife, recreational and visual values. Native plants, unique features, and public use of recreation areas are protected.

Prescribed Fire

Timing and intensity of burns are controlled to protect crop and wildlife trees and nesting animals, limit soil damage, and reduce erosion, sediment loads, and smoke emissions. Firelines are built and maintained to reduce erosion and sediment and protect wetlands. Burns are patterned to enhance variety of wildlife habitat.

Mechanical Methods

Erosion and sediment are reduced by mandating slope limitations, contour tillage, buffers along streams ,and prompt revegetation. Treatments are timed to limit soil compaction. Roads, trails, and ditches are kept free of debris.

Herbicides

Choice of herbicide and method, rate, and timing of application are managed to reduce risks to humans, wildlife, and other environmental elements. Supervision and training of applicators are mandatory to reduce risks of accidents and exposure. Protective clothing and safety equipment are mandated to reduce exposure. Drift of herbicides is reduced by using special spray nozzles and applying during favorable weather. Precautions are specified to reduce risks of spills and water or worker contamination. Water supplies and adjacent lands are protected by buffers.

Biological Method

Stocking and grazing patterns are controlled to reduce damage to soil, water, and the forage resource.

Manual Method

Safety is provided through training and use of protective equipment.

Environmental Consequences

Chapter IV presents detailed analyses of effects of vegetation management methods on various environmental elements. It also summarizes effects of alternatives on each element. Alternatives differ with respect to acres treated, mix of methods, and intensity of tools available in each method. Each of these factors influences the direction and severity of environmental effects. This section of the summary briefly discusses effects on key environmental elements.

Alternative A treats no acres. Alternative B treats minimum numbers of acres for basic resource protection. Alternatives C, E, F, and G employ all methods and use low- to moderate-disturbance tools. Alternative D eliminates the use of herbicides. Alternatives C and H use high-disturbance tools such as severe slash burns. Raking, and heavy disking are also used in alternative H which treats the most acres and increases the use of high-disturbance tools.

Human Health and Safety

All herbicides and additives investigated provide ample margins of safety for the public when applied using typical rates and methods. However, because 2,4-D; 2,4-DP, picloram, dicamba, and tebuthiuron have lower margins of safety or pose possible environmental risks they were not considered for use in the Ozark/Ouachita Mountains area. In general, worker exposure is reduced by aerial application.

Accidental injuries from other methods pose greater risks to workers than health impacts from herbicides. Accidents are most common and severe with manual methods. Prescribed fire poses the next highest risk. Alternative A poses the lowest overall risk to human health and safety because no tools are used and risks are limited to wildfires.

Wildlife

All 11 herbicides and 4 additives provide ample margins of safety for terrestrial and aquatic wildlife when applied using typical rates and methods. When applied at extreme rates, six chemicals pose risks to some species. Only three of these, hexazinone, triclopyr and limonene are prepared for use. Accidental spills of some chemicals into surface water would pose risks to some aquatic species.

Vegetation management benefits some wildlife species and harms others. For example, lack of treatment or low-disturbance tools favor mid- to late-successional habitats and associated wildlife; whereas early successional habitats and wildlife are favored by more intensive treatments. Alternatives C, E, F, and G provide the greatest variety of habitats and associated wildlife, because they have the most balanced mix of low- to moderate-disturbance tools.

Threatened and Endangered Species

Some species occur only in habitats where no vegetation management occurs. Low toxicities to animals, low risk of exposure and use of biological evaluations limit risks of adverse herbicide effects on listed animals. Since threatened or endangered plants may be extremely sensitive to herbicides, mitigation measures and biological evaluations are essential for protecting these plants.

Lack of treatments may prevent recovery of species which require periodic disturbance. Many species are fire-dependent, and some are sensitive to intensive or frequent treatments.

Vegetation

Lack of treatment or use of low-disturbance tools favors woody species. High disturbance favors herbaceous species. Alternative A most favors woody understory and midstory species.

Soil

Severe slash burns and raking pose high to extreme risks to soil productivity on all soils, mainly through loss of organic matter and nutrients. Moderate slash burns and piling pose low risks on some soils. Soil compaction is only significant for raking on clay and loam soils. Erosion is most severe after heavy disking. Raking and disking though occur only in alternative H.

Lack of underburns in alternatives A increases occurrence and adverse effects of wildfires. Alternatives B, E, and F best protect soil productivity because only low- to moderate-disturbance tools are used and underburns reduce wildfire effects.

Water

No method significantly affects chemical water quality. Because herbicides are applied at low rates, are separated from streams and wells by buffers, and are subject to considerable downstream mixing and dilution, risks to water from typical application are very slight. Aerial herbicide application, however, increases risks of accidental pollution of streams.

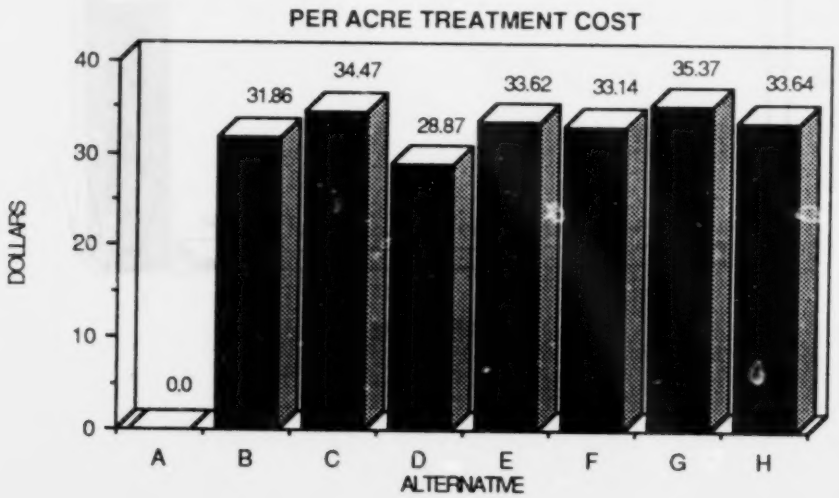
In general, stormflows and sediment loads are increased slightly by low to-moderate disturbance tools, and substantially by high-disturbance tools like severe slash burns, raking and heavy disking. Lack of underburns in alternative A slightly increases occurrence of severe wildfires. Alternative A best protects water quality, but B and F do almost as well.

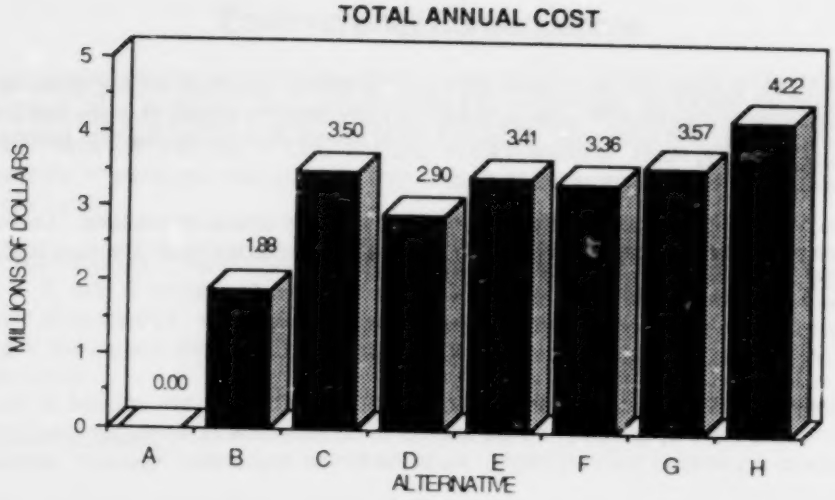
Air

Emissions of pollutant gases (carbon monoxide, hydrocarbons, nitrogen oxides, sulfur oxides, photochemical oxidants) are generally not sufficient to pose significant risks to air quality. Particulate emissions are least for grass and pine-grass underburns, moderate for slash burns and pine-light brush underburns, and highest for wildfires. Long-term exclusion of underburns can cause available fuels to triple in some forest types, thus greatly increasing potential for wildfire incidence.

Economics

Direct, per acre costs are lowest for prescribed fire. Opportunity costs (sacrificed outputs) are generally reduced as market outputs increase. Lack of treatment reduces outputs and induces damages to facilities such as roads and other capital investments which deteriorate from lack of maintenance. Alternatives F and H have the greatest advantage because their direct costs are among the lowest and their indirect costs are low to moderate.





Social Values

Public response becomes negative at the extremes of no treatment or high-disturbance tools, and positive with manual methods. Visual values decline with high-disturbance tools, but vistas are lost if treatments are excluded. Cultural resources are most damaged by soil tilling tools like disking and raking. Alternatives E and F have the greatest advantage because public acceptance becomes positive and risks to visual values and cultural resources are moderate.

Aerial Application

Two alternatives, G and H, include the use of aerial application of herbicides by helicopter. Alternative G treats 600 acres (about .02 percent of the study area), and alternative H treats 14,500 acres (about .50 percent of the study area).